

# PATENT SPECIFICATION

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DRAWINGS ATTACHED

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## (54) A CIGARETTE-MAKING APPLIANCE

(71) We, GIZEH-WERK G.m.b.H., of 5275 Bergneustadt/Rhld., Germany, a German Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to an appliance for filling prefabricated cigarette paper tubes.

In known cigarette-making appliances, a plug of tobacco formed by a horizontally movable compression plate is inserted by an ejector capable of moving in the direction of the cigarette tube, into the tube held on a hollow nozzle. The nozzle is accommodated on the outside of the appliance, while the ejector part is movably arranged inside it.

All such devices employ a drive comprising numerous components such as levers, cams, parallel motions, and so on for the drive of the compression plate and of the ejector part. This makes for a very intricate design, involving laborious production processes and such devices are therefore expensive. Also, on account of the comparatively large number of interacting parts, these appliances suffer much from wear. It is a further disadvantage that the lever and crank drives necessarily require much space. This makes these appliances cumbersome and also impairs their appearance. The numerous articulations and sliding guides require much force to overcome friction so that more force is required for the operation of the appliance than would be needed for the actual filling process. It is true that this can be overcome by using a long operating lever but, quite apart from making the appliance more awkward, this has the disadvantage that if there is any jamming, for instance if too much tobacco has been put into the appliance, it may easily be damaged or the cigarette paper tube may burst because, with the larger lever transmission, the feeling for the correct operating force is lost.

The present invention consists in a device for filling a tube or cigarette paper with tobacco to make a cigarette, the device in-

cluding a casing which houses a slide, an elongated chamber for tobacco formed in the slide, a nozzle mounted on the slide which nozzle communicates with the chamber, a clamp for holding the tube of paper by one end on the nozzle, and compression means mounted on the slide wherein tobacco in the chamber can be compressed into a plug by the compression means, the slide being so mounted within the casing that by manually pushing on the slide the chamber capacity is reduced and the plug is forced through the nozzle into the tube of cigarette paper thus forming a cigarette.

A device of this kind can do entirely without awkward components and complicated drive arrangements. It comprises few parts, of simple shape, an advantage in particular from the point of view of manufacture. A further advantage consists in that the appliance can be made very small. If it is made as part of, or built into, a casing of a given size, the space saved by the compact design now becomes available for accommodating tobacco and/or cigarette paper tubes. Since there are no projecting levers or cranks as in the known appliance, the device can be made in an elegant style, so as to be of pleasing appearance, containing the necessary requisites and suitable for being left standing about, for instance, as a table cigarette-maker in the home.

There are various possibilities for accommodating the compression means on the slide. An advantageous arrangement is one where the compression means is pivoted on the slide. In particular, the pivoting point may then be placed on the end of the slide opposite the hollow nozzle.

According to a further feature of the invention, the compression means forms an actuating part for the clamping device holding the cigarette paper tube on the nozzle, or it may be itself arranged as a clamping device. This achieves a simple and convenient design for the appliance.

The walls of the casing guiding the slide may then be equipped with support faces, at

different levels, for the compression means. This enables the position of the compression means in relation to the slide to be governed by the distance covered by the slide, thus ensuring the correct operation of the clamping device by the compression plate.

The casing of the appliance does not have to contain any parts other than the slide guide but it may be convenient to provide one or several chambers for tobacco and/or cigarette paper tubes.

The compression means, in its pushed-down working position, when it is has formed the plug of tobacco ready to be inserted into the prefabricated cigarette paper tube, may be detachably fixable to the slide by parts engaging with each other.

This ensures that the compression means is kept in its proper position even during the actual filling process, that is to say, when pushing the paper tube over the plug of tobacco by means of the slide, irrespective of the magnitude of the pressure exerted during this time on the compression plate. If the appliance is designed so that the compression means not only forms the plug of tobacco but at the same time also pushes the clamping piece against the hollow nozzle with the paper tube fixed on it, in order to retain the sleeve, this retention of the compression plate on the slide also ensures that the paper tube remains firmly on the nozzle during the entire motion of the slide and cannot slide off the nozzle or shift.

The parts used for the detachable fixing can be, for instance, spring-loaded parts notching into position, where the locking action is subsequently cancelled by pushing the part back, or by pushing in a release element. This can be achieved, for instance, by means of parts in the form of latches or simple locks.

A particularly convenient arrangement also consists in providing on the compression means a locking piece capable of relative motion with respect to the compression means, and having at least one locking element intended to engage with the slide. A displaceable locking piece of this type is easy to make, it can be readily fixed on the compression means, and is particularly useful for the operation of the appliance. The direction of shifting of the locking piece can be selected so as to be horizontal or even vertical, transverse to the longitudinal direction of the compression means. However, particularly convenient is the design where the locking piece can be displaced in the longitudinal direction of the compression means. It is convenient to keep the locking piece under the action of a spring or other elastic part tending to keep it in a rest position where it is not attached to the slide.

When using a displaceable locking piece, the design of the appliance can be arranged in particular so that the slide has on its face side

recesses engaging with lugs, projections, or the like on the locking piece. This is very convenient for the production of the appliance and helps to ensure a neat layout with easy accessibility of the individual parts.

In a particularly advantageous design of the appliance, locking faces are provided on the locking piece and on the slide, so as to engage with each other. They are inclined with respect to the plane of displacement of the locking piece. This ensures that the compression means is pulled up to the slide, on operation of the locking piece, on account of the wedge action of the locking faces, and this pulling up of the compression plate is particularly convenient for the proper formation of the cord of tobacco.

It is also convenient to provide opposite noses on the compression means and on the locking piece, so that the operator's fingers can engage with these noses; this facilitates further the use of the appliance in conjunction with a displaceable locking piece.

According to a further feature of the invention, the cigarette paper tube to be filled is held on the nozzle of the slide by an elastically deformable clamping piece accommodated in a recess of the slide. The elasticity of the clamping piece presents the advantage that the paper tube is firmly held on the nozzle even if the height of the operating part of the clamp such as a lug or the like, on the compression means, slightly changes. Furthermore, the elasticity of the clamping piece ensures that it engages gently with the paper tube so that there is no danger of damage or impairment of the appearance of the cigarette.

It is also convenient to equip the elastic clamping piece with a recess at its end facing the hollow nozzle. The recess can be arranged to suit the shape of the nozzle. However, it can be shaped in particular also in such a way that the clamping piece comes to rest against the paper tube only near the edges of this recess so that the tube is held at several points.

The clamping piece may have lateral wings at its end facing the nozzle, the wings engaging with recesses in the slide. This provides a simple means of holding the clamping piece. This arrangement may also be convenient in connection with the aforementioned recess in the elastic clamping piece, to ensure a clamping action at several points. The arrangement can be shaped for this purpose in particular so that the recesses in the slide have inclined boundary faces directed downwards and towards the centre of the slide. The wings of the clamping piece will then come to rest against these faces, during the clamping process.

Slots may be provided in either the clamping piece or the slide, so as to engage with the lugs or projections of the other part, in order to guide the clamping piece in the slide.

Further details and features of the invention

will be explained below with reference to the drawing, in which:

Figure 1 is a perspective view of the general arrangement of one embodiment of the appliance;

Figure 2 is a cross-section through the appliance;

Figure 3 is a section along the trace III—III of Figure 2;

Figure 4 is a section, corresponding to that of Figure 3, but with the slide shown in a different position;

Figure 5 is a detail showing the design of the support for the compression plate;

Figure 6 is a plan view of the slide without the compression plate

Figure 7 is a longitudinal section through the slide;

Figures 8 and 9 are front views of the slide;

Figure 10 shows the front end of the slide with the clamping piece inserted;

Figure 11 is a section along the trace XI—XI of Figure 6, with the complete clamping device;

Figure 12 is a section along the trace XII—XII of Figure 6; and

Figure 13 is a section along the trace XIII—XIII of Figure 6;

Figure 14 is a longitudinal section through a second embodiment of the appliance with the compression plate, shown in side view, partly raised;

Figure 15 is a cross-section through the appliance along the trace XV—XV of Figure 14, with the compression plate lowered;

Figures 16 and 17 show views of the front end of the slide and of the compression plate, with locking means;

Figure 18 is a front view of the appliance with the compression plate loosely resting in position, but without the locking piece capable of displacement on the latter;

Figure 19 is a front view, corresponding to that of Figure 18, with the compression plate pushed down; and

Figure 20 is a plan view of the front end of the slide, with the compression plate swivelled up.

The appliance has a casing 1 divided in the arrangement shown here in two compartments 11 and 3. The compartment 11 forms a chamber closeable by means of a lid 2, for storing tobacco and paper tubes, while the smaller compartment 3 is the actual cigarette-making part. A slide 4 can slide longitudinally on guide bars 27 between the side walls 21 of this compartment 3. A nozzle 5 for accommodating a paper tube 24 is firmly fixed, for instance, by pressing in or forming during manufacture, at the front face of the slide 4. In Figures 3, 4 and 6 this is the left side face. Also, at this face of the slide there is a clamping device intended to hold the paper tube on the nozzle 5 during the filling process. This clamping device has a clamping piece 6

accommodated in a recess 16 in the front face of the slide and adjusted by means of screws 18 and springs 17 (Figure 11) so that its top edge is in one plane with the top edge of the slide 4, while a gap 19 is left clear between the nozzle 5 and the clamping piece 6 so as to enable the paper tube 24 to be pushed on the nozzle 5 without impediment.

A tobacco compression means formed as a compression plate 7 is pivoted at the end of the slide 4 opposite the nozzle 5, by means of a hinge or hinge pin 8. A gutter-shaped guide tongue 9 is accommodated in the casing part 3 by means of screws 12 and a holding piece 23. An elongated recess 14 in the slide 4 forms a tobacco chamber. The semicircular, round bottom of the chamber has a slot-shaped aperture 15. The length of the slot limits the path of the slide 4, and it may be convenient to use also one of the fixing screws 12 as a stop.

The holding piece 23 is preferably screwed to the guide tongue 9 and the tobacco chamber bottom so that there is a certain elasticity, provided, for instance, by inserting slightly elastic spring washers 13 under the heads of the screws 12, to ensure that the guide tongue 9 rests well on the bottom of the tobacco chamber. The length of the tobacco chamber 14 is limited by an angle-section cover 20 on the slide 4 (see Figures 3, 4, and 7). In the initial position of the slide, this cover angle 20 covers also the holding piece 23. The latter part forms at the same time a stop for the cord of tobacco 29 formed by the compression plate 7 in the tobacco chamber.

The compression plate 7 is at the same time also very convenient for operating the clamping device for the paper tube. As shown in Figures 4 and 5, the side walls 21 of the casing part 3 forming the slide guide are each made with a recess 22 and stop faces 30. The depth of the recess 22 should be slightly greater than the height of the gap 19 (Figures 3, 11) between the nozzle 5 and the clamping piece 6. The compression plate 7 rests in its downward turned position on the upper sides of the side walls 21. When the slide 4 is shifted, the recesses 22 in the side walls 21 give the compression plate 7 a slight downward motion, after it has been moved for a short distance, when a pressure is applied to it, so that a cam 26 (Figures 3, 4) at the front end of the compression plate pushes down the clamping piece 6 and thus clamps the paper tube 24 to the nozzle 5. Just before the slide has completed its path, this clamping action is removed again, because the compression plate is slightly lifted by the end of the recesses 22. The short distances at the beginning and at the end of the slide motion, where the cigarette paper tube is not clamped, are most conveniently arranged so as to correspond roughly to the length of the nozzle 5. With the exception of these short

distances, there is a gap 28 (Figures 2, 5) between the compression plate 7 and the upper edges of the side walls 21 so that there is any friction only on the lower guide bars 27 of the slide 4. This ensures a very easy motion of the slide 4. Even if some play should be formed after long use, between the slide and the casing bottom, this is of no significance. The play could not cause any trouble because the elastic fixing of the guide tongue 9 always accommodates itself to the bottom of the tobacco chamber and all other parts governing the cigarette-making process are fixed to the slide.

The appliance operates as follows. After the compression plate 7 has been folded back, an operation which could be facilitated by providing a nose or projection 25 (Figure 5) at its front end, the tobacco chamber 14, now open, can be filled with tobacco. Then the compression plate 7 is pushed down, and an empty cigarette paper tube 24 is pushed on the nozzle 5. Now it is only necessary to move the slide 4 once forward and back. The cigarette-making process is now completed.

During the operation of the slide 4, first the downwardly directed pressure pushes the tobacco into the semicircular recess on the lower part of the compression chamber and it is compressed into a cord 29 of tobacco by the compression chamber 10 (Figure 2) bounded by the guide tongue 9. By the motion of the slide 4 to the right (Figure 4) the paper tube 24 is pulled over the tobacco cord 29. The tube 24 is now held on the nozzle 5 by the pressure exerted on the compression plate by the clamping piece 6, while this is being pushed down. The forces are shown in Figure 4. Just before the end of the process, when only the end of the plug of tobacco 29 is left in the hollow nozzle 5, the clamping piece 6 is released and the clamping action removed, so that on further motion of the slide 4 up to its stop, the almost completed cigarette remains standing and the hollow nozzle 5 is pulled out of it. The clamping piece is released by the slight upward motion of the compression plate 7 at the end of the recesses 22 in the side walls 21. If now the slide 4 moves in the opposite direction, it pushes the finished cigarette in front of it, pulling it at the same time off the guide tongue 9 and finally ejecting it.

The embodiment illustrated in Figures 14 to 20 will now be explained in more detail.

A slide 33 is accommodated in a casing 31 with a base plate 32. The lateral guide bars 33a (Figure 15) of the slide 33 slide in appropriate longitudinal slots 31a of the casing 31. There is a hollow nozzle 34 at the front side, the left side in Figure 14, of the slide 33. This hollow nozzle 34 is moulded in, pressed in, or for instance, formed on casting or injection moulding of the slide and is to be pushed into

the cigarette paper tube 35 to be filled with tobacco.

At the end of the slide 33 opposite the hollow nozzle 34, a tobacco compression plate 37 is pivoted on a hinge pin 36. The plate 37 has a compression piece 37a engaging with an elongated recess 38 of the slide 33, when the compression plate is pushed down. The recess 38 forms a tobacco chamber. The purpose of this operation is to form the tobacco 39 placed in this chamber into a round tobacco plug 39a (Figure 15). A gutter-shaped guide tongue 42 is fixed in the casing 31 by means of a pin 40 and a holding piece 41 serving at the same time as a stop for the tobacco plug 39a. The tobacco plug comes to rest on the guide tongue 42. The tobacco chamber 38 is bounded at its rear end by an angle-section cover 43 formed by the slide 33 and covering in the initial position of the slide also the holding piece 41 (Figure 14).

In this appliance, the cigarette is shaped as follows: First, after an empty cigarette paper tube 35 has been pushed on the hollow nozzle 34 and the tobacco 39 in the tobacco chamber 38, the compression plate 37 is pushed down. During this operation, the tobacco is compressed to form a plug 39a between the guide tongue 42 and its semicircular recess on the underside of the compression piece 37a, as shown in Figure 2. The slide 33 is then pushed to the right in casing 31 (Figure 14) and pulls the paper tube 35 with it over the tobacco plug 39a, the guide tongue 42 ensuring that the tobacco is properly inserted in the cigarette tube.

In order to ensure that the tube 35 is firmly held on the hollow nozzle 34 during the filling process, a clamping device is provided. In the advantageous design shown here, the clamping device has a clamping piece 44 made of an elastic material such as rubber. This clamping piece 44 is held in a recess 45 at the front end of the slide 33, as shown in particular in Figures 18 to 20. Lateral holding and guiding lugs 46 of the clamping piece 44 engage in slots 47. At its end facing the hollow nozzle 34, the clamping piece 44 has a recess 48 and it has also two lateral wings 49 engaging with recesses 50 of the slide 33. The lower boundary faces 50a of these recesses 50 are inclined downward and towards the centre of the slide. A pressure piece 51 formed on the front end of the compression plate 37 actuates the clamping piece 44. Figure 18 shows the clamping piece 44 in its released rest position, while Figure 19 shows its working position, where the clamping piece 44 is pushed down by the pressure piece 51 and deformed in such a way as to hold the cigarette tube 35 against the hollow nozzle 34 at two places. The wings 49 rest here on the lower bounding faces 50a of the recesses 50. With the compression plate 37 lifted up, the clamping piece 44 is protected against

dropping out by its shape, in conjunction with its accommodation in the slide.

The appliance shown here is also equipped with a stopping or locking device enabling the compression plate 37 to be detachably fixed, in its pushed down position, on the slide 33. For this purpose, the front end of the compression plate 37 is designed as a guide 52 for a locking piece 54 capable of being displaced in the longitudinal direction of the compression plate against the force of springs 53, by a limited distance. The distance is limited by pins 55 screwed or in some other way fixed in the compression plate 37.

The locking piece 54 is saddle-shaped in its lower part so that there is a central free gap for the cigarette paper tube 35. Projections 57 pointing toward the front face of the slide 33 are accommodated on legs 56 (Figures 14, 16 and 17) pointing downward and limiting the sides of this aperture. The projections 57 engage in recesses 58 of the slide front face when the locking piece 54 is displaced, as shown in Figure 17, so as to hold the compression plate 37 on the slide 33.

In the advantageous arrangement shown here, inclined locking faces 59 are provided on the projections 57 of the locking piece 54 and the recesses 58 of the slide 33. The locking faces 59 ensure, by their wedge action, that the compression plate 37 is pulled up against the slide 33 on shifting of the locking pieces 54 in the direction of the arrow of Figure 3.

Noses 60 and 61 provided one at the front end of the compression plate 37 and the other at the locking piece 54 facilitate convenient and ready operation of the appliance, during the locking operation and during the subsequent motion of the slide in order to bring about the filling of the paper tube. At the end of the slide path, the cigarette paper tube is filled with tobacco. This end of the slide path could be limited by a stop in the casing. The slide 33 now has to be pushed back only into its initial position, in the opposite direction. After the release of the noses 60 and 61, an operation bringing about at the same time also the release of the clamping action of the clamping piece 44 returning under the action of its elasticity into its rest position (Figure 18), the finished cigarette can be taken immediately off the hollow nozzle 34.

The casing parts of the device, the slide, the compression plate and the locking piece are advantageously made of plastics material.

#### WHAT WE CLAIM IS:—

1. A device for filling a tube of cigarette paper with tobacco to make a cigarette, the device including a casing which houses a slide, an elongated chamber for tobacco formed in the slide, a nozzle mounted on the slide which nozzle communicates with the chamber, a clamp for holding the tube of paper by one end on the nozzle, and compression means

mounted on the slide wherein tobacco in the chamber can be compressed into a plug by the compression means; the slide being so mounted within the casing that, by manually pushing on the slide the chamber capacity is reduced and the plug is forced through the nozzle into the tube of cigarette paper thus forming a cigarette.

2. A device according to claim 1, wherein a guiding tongue is fixed in the casing for guiding the plug through the nozzle and into the tube of paper.

3. A device as claimed in claim 1 or 2, wherein the compression means is hinged on the slide.

4. A device as claimed in claim 3, in which the hinge point of the compression means is at the end of the slide opposite that with the nozzle.

5. A device as claimed in any one of claims 1 to 4, wherein the compression means forms an actuating part for the clamp holding the cigarette tube on the nozzle or is itself arranged as a clamp.

6. A device as claimed in claim 5, wherein the walls of the casing guiding the slide are equipped on at least a part of their length with recesses or grooves.

7. A device as claimed in any one of claims 1 to 6, wherein the casing contains in addition to the slide guide one or several chambers for tobacco and/or cigarette paper tubes.

8. A device as claimed in any one of claims 1 to 7, wherein the compression means in its pushed-down working position is detachably fixed to the slide by parts engaging with each other.

9. A device as claimed in claim 8, wherein a locking piece capable of sliding relatively to the compression means is provided with at least one locking element for engaging with the slide.

10. A device as claimed in claim 9, wherein the locking piece can slide in the longitudinal direction of the compression means.

11. A device as claimed in claim 9 or 10, wherein the locking piece is under the action of a spring force tending to retain it in its rest position.

12. A device as claimed in any one of claims 9 to 11, wherein the slide has its at front face recesses for engagement with lugs, projections or the like on the locking piece.

13. A device as claimed in any one of claims 9 to 12, wherein locking faces are provided on the locking pieces and on the slide so as to rest against each other, the locking faces being inclined in relation to the plane of displacement of the locking piece.

14. A device as claimed in any one of claims 9 to 13, wherein the compression means and the locking piece have opposing noses to engage with the operator's fingers.

15. A device as claimed in any one of

claims 1 to 14, wherein an elastically deformable clamping piece is arranged in a recess of the slide.

5 16. A device as claimed in claim 15, wherein the clamping piece has a recess on its face opposite the hollow nozzle.

17. A device as claimed in claim 15 or 16, wherein the clamping piece has lateral wings engaging with recesses of the slide.

10 18. A device as claimed in claim 17, wherein the recesses of the slide have downwardly directed limiting faces pointing towards the centre of the slide.

19. A device as claimed in claims 15 to 18, wherein the clamping piece has lateral projections accommodated in slots of the slide. 15

20. A device substantially as described with reference to the accompanying drawings.

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